He was married in October, 1892, to Mrs. Emma A. Alger, who died in February, 1894. When his wife died he was left with a mortgaged home and two children by her former marriage, Philip Alger aged 18, and Oscar, aged 9 years. He supported Philip at the Oregon Agricultural College till, when nearly ready to graduate, the young man left to be married. Young Oscar Alger, he adopted as Oscar Cusick. This younger boy was also sent to college, but he too left before graduating, to get married. It is not generally known, but it was these responsibilities which kept Mr. Cusick from doing more botanical work during this part of his life.

Mr. Cusick always took an active part in Church and in civic affairs. His neighbors knew that he went off on long trips to pick flowers, but they did not hold that against him. His modesty was so great that he seldom talked about this work, lest it should be interpreted as boasting. He would never allow any account of his life or work to appear in the local papers. It was very nearly the same with his family. Of course they knew how much time he spent on his work, but it seemed to them that he was just messing around with his specimens. The only indication they saw of the importance of his botanical work was the occasional visit from Dr. Watson or Prof. Piper or some government specialist from Washington, D. C., and they little realized that Mr. Cusick's name and work were known to scientists half way around the world.

Mr. Cusick died at his brother's home, Union, Oregon, October 7, 1922. He is survived by one brother, S. F. Cusick, of Union, Oregon; one sister, Mrs. S. E. Daley, of Scio, Oregon; and two half-sisters, Mrs. Hattie Dodd, of Middleton, Idaho; and Mrs. A. N. Busick, of Union, Oregon.

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NOTES ON THE DISTRIBUTION OF NAJAS IN NORTHEASTERN AMERICA.

M. L. Fernald.

In studying the four species of *Najas* which occur in the northeastern states and Canada so many discrepancies have been found between the published ranges and the occurrence of these plants as shown by specimens, that the following notes seem worth recording.

NAJAS MARINA L. (*N. major* All.). This widely dispersed species of brackish or fresh waters of tropical and temperate regions is rare in North America and in the Atlantic States is as yet known north of Florida only from central New York. From Morong's treatment[1] it would be inferred that the species is there confined to the northern end of Cayuga Lake and adjacent marshes, but there are other long-known stations. In 1864 the species "was discovered in Onondaga Lake, first by Judge G. W. Clinton, on the northern border of the lake (between Salina and Liverpool), and soon after by Mr. John A. Paine, Jr., on its western side."[2] In his *Catalogue*, Paine[3] gives a very detailed account of the Onondaga Lake stations. The plant is found in streams entering the lake; but "It abounds, however, in the lake, in water ten to twenty-five feet deep; most luxuriantly along the edge of a sudden descent of the bottom, at a distance from shore. When the water is clear and still, the plants can be seen growing on the bottom, branching in all directions from the root. But the best specimens come from the deepest water, out of sight." In 1912 Mrs. Goodrich[4] reported it also from Tulley Lake, Onondaga Co. In 1865 the second New York region for the species was discovered, in Irondequoit Bay of Lake Ontario. Material from this region was sent to Dr. Gray by C. M. Booth but in recording the discovery Gray[5] accredited it to E. J. Pickett. The stations about the northern end of Cayuga Lake are either in shallow water of marshes or in lake-water, while in Wayne County Peck found it in "Seneca river near Savannah."[6]

There are reports of the plant from Michigan and Minnesota but no material from the former region has been examined by the writer, although the Minnesota record (Lake Minnewaska, *B. C. Taylor*) is supported by good material; but, in view of the somewhat wide dispersal of *Najas marina* in the subsaline waters of central New York, it is certain that we should watch for it in similar habitats nearer the Atlantic coast. The probability of finding it along our coast is emphasized by the occurrence with it in or about Onondaga

[1] Morong, Mem. Torr. Bot. Cl. iii. No. 2: 58, 59 (1893).

[2] Gray, Am. Journ. Sci. ser. 2, xxxix. 107 (1865).

[3] J. A. Paine, Cat. Pl. Oneida Co. and Vic. 80 (1865).

[4] L. L. H. Goodrich, Fl. Onondaga Co. 30 (1912).

[5] Gray, Am. Journ. Sci. ser. 2, xli. 131 (1866).

[6] Peck, N. Y. State Mus. Nat. Hist. Ann. Rep. 1872, 88 (1874).

Lake of such maritime plants as *Zannichellia, Ruppia, Triglochin maritima, Diplachne maritima* Bicknell,[1] *Scirpus campestris,* var. *novae-angliae, Juncus Gerardi, Salicornia europaea, Chenopodium rubrum* and *Ranunculus Cymbalaria.*

N. FLEXILIS (Willd.) Rostk. & Schmidt. Morong's very sweeping assertion, that *N. flexilis* "is widely diffused in North America, being found in Canada, from the Atlantic to the Pacific, and equally common in the United States and Mexico. It is as widely distributed in the Old World,"[2] needs severe pruning on all sides. The writer has before him not only the material in the Gray Herbarium and the herbarium of the New England Botanical Club, but that of the Missouri Botanical Garden (because of Englemann's specia linterest in the genus) and of the University of Minnesota. In all this mass of material there are no clearly identifiable specimens from south of Maryland, Ohio, Indiana, Illnois and Iowa,[3] while to the west of Iowa and Minnesota the species seems to be only in Idaho, Oregon, Washington and British Columbia.[4] Instead of being "as widely distributed in the Old World," *Najas flexilis* is there one of the most localized of species, being confined to 3 areas in Ireland,[5] 1 or 2 in Scotland[6] and a few in the Baltic region.[7] In fact the great rarity and restricted range of *N. flexilis* in Europe and the discovery there of numerous fossil beds containing fruits of the species[8] have made this plant one of unusual interest in Europe since it seems there to be a localized survivor of the formerly wide-spread North American flora which has become so generally obsolete in Europe.

N. GUADALUPENSIS (Spreng.) Morong is of much wider range northward than has been supposed. Bicknell has recorded it from

[1] Bicknell, Bull. Torr. Bot. Cl. xxxv. 195 (1908).

[2] Morong, l. c. 60 (1893).

[3] Rendle cites a specimen from Missouri but all the Missouri plants I have examined seem to be *N. guadalupensis.*

[4] This isolation in the northwestern states or British Columbia suggests other ranges, for example, that of *Megalodonta Beckii* (Torr.) Greene (*Bidens Beckii* Torr.): Quebec and Nova Scotia to New Jersey, west to Missouri and eastern Manitoba, also in Washington; or *Potamogeton Robbinsii* Oakes: New Brunswick to Maryland, west to Indiana, Michigan and Ontario, and in northwestern Wyoming, Idaho, Oregon, Washington and southern British Columbia.

[5] Praeger, Irish Top. Bot. 330 (1901).

[6] Watson, Top. Bot. 425 (1883); Praeger, Tourist's Fl. W. Ireland, 198 (1909).

[7] See Rendle, Trans. Linn. Soc. ser. 2, Bot. v. 404 (1899).

[8] See Rendle l. c.

Nantucket,[1] Pennell collected it on Martha's Vineyard (No. 3486, distributed as "*Potamogeton foliosus* Raf. ?"), Fernald and Long got it on Block Island, Charles Wright had material which he left (now in herb. N. E. Bot. Cl.) marked simply "Connecticut," and St. John collected it in Suffolk Co., Long Island (no. 2541, distributed as *N. flexilis*). West of the Alleghenies it extends northward to the Great Lakes whence it follows eastward to Jefferson Co., New York (*Fernald, Wiegand & Eames*, no. 14,116) and in the St. Lawrence to Chambly Co., Quebec, (*Victorin*, nos. 8164, 11,347); and farther west it reaches Minnesota, Nebraska and Oregon. Nearly if not quite all the material from the southern states and Mexico which has passed as *N. flexilis* is apparently *N. guadalupensis*, which is readily distinguished in either pistillate flower or fruit, the style of *N. flexilis* being filiform and (including the stigmas) 0.8–2 mm. long, the stouter style (and stigmas) of *N. guadalupensis* only 0.1–0.6 mm. long. The seed of *N. flexilis* is highly lustrous and obscurely marked (under high power) with 30–40 rows of more or less hexagonal reticulations, that of *N. guadalupensis* is opaque and clearly marked with 15–18 rows of mostly rectangular areolae.

The plant of the Great Lakes and the St. Lawrence here referred to *N. guadalupensis* has long been a source of perplexity. Obviously not referable to *N. flexilis* on account of its wiry and somewhat turgid quality and the flat leaves, the plant has been specially puzzling because no one who has collected it—at Wolf Lake, Indiana, and in bays of Lake Erie as well as in the St. Lawrence near Longueuil—has secured fruit. In August, 1922, the plant was found by Fernald, Wiegand and Eames in comparatively deep water of Chaumont Bay, an arm of Lake Ontario in Jefferson Co., New York. There the puzzling plant contrasted sharply with *N. flexilis* in its stiff and diffusely bushy or broom-like aspect, its almost wiry stems and branches, and its short and flat rather fleshy leaves, and in a deep purple color which suffused the whole plant. Many sheets of specimens were collected, but in the whole series only a few very scattered fruits occur. These, however, are so exactly like those of characteristic specimens from subtropical and tropical America that there is no further question regarding the identity of the plant.

The scarcity of fruit on *N. guadalupensis* in the St. Lawrence basin is doubtless due to the fact that this essentially tropical species

[1] Bicknell, Bull. Torr. Bot. Cl. xxxv. 60 (1908).

is too far north for successful fruiting but, having reached the Great Lakes by way of the Mississippi Valley, it has been able to spread northeastward into the Province of Quebec by virtue of its freely rooting stems and branches.

N. GRACILLIMA (A. Br.) Morong is one of the most distinct species of the genus on account of its straight linear-setaceous leaf-blades strongly divergent from the conspicuously auricled and scarious sheathing base and its commonly subfalcate, very slender fruits with about 24 rows of longitudinal elongate areolae. Ever since the publication of Morong's *Najadaceae of North America* it has been customary to include "Missouri (Engelmann)."[1] in the range of the species. Considerable search has failed to reveal any statement by Engelmann that the plant is found in Missouri and in order further to check the matter the Engelmann material of *Najas* was borrowed, through the kindness of Dr. J. M. Greenman, and search through this abundant material fails to reveal any specimens from west of eastern New York, New Jersey and eastern Pennsylvania. The error may easily have arisen through one of those endlessly misleading labels which bear at the top in clear print the name of the owner and his address, while the really important data is written below in an obscure hand. Thus material in Engelman's herbarium has a label like this: In print at the top, "HERB. G. ENGELMANN, ST. LOUIS MO." and below written in Engelmann's most Germanic hand "*Najas Indica* var. *gracillima*. Lake Quinsigamond, Worcester, Mass., Aug. 11, 1880. Ex Hb. Gray, 1883." It was apparently this or a similar label which led to the now almost traditional statement that *N. gracillima* (*N. indica*, var. *gracillima* A. Br. in Engelm. in Gray, Man. ed. 5, 681) occurs in Missouri. As a matter of fact the species is peculiarly localized: in muddy, peaty or sandy ponds or pools from southern New Jersey and eastern Pennsylvania northeastward near the coast to Knox Co., Maine, and locally inland to Saratoga Co., New York, (shallow water of the Hudson, above Waterford, October 21, 1922, *H. K. Svenson*), southern Litchfield and Tolland Cos., Connecticut, Worcester, Middlesex and Essex Cos., Massachusetts and Kennebec Co., Maine (Cobossee Contee Lake, August, 1898, *T. J. Battey* in herb. N. E. Bot. Cl.).

GRAY HERBARIUM.

[1] Morong, Mem. Torr. Bot. Cl. iii. No.2: 61 (1893).